DOCUMENT RESUME

ED 245 690 IR 050 762

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TITLE The Future of Database Information Services.
PUB DATE 20 Sep 82
NOTE 12p.; Paper presented at the Conference of the Association of Information and Dissemination Centers (Cambridge, MA, September 20, 1982).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Databases; Data Processing; *Information Networks; *Information Utilization; Marketing; *Online Systems; *Technological Advancement; Teleconferencing; Videotex; Word Processing
IDENTIFIERS *Database Producers; Electronic Mail; Videodiscs

ABSTRACT

Changes affecting the delivery of information over the next 10 years are going to be more numerous, farther reaching, and more rapid than those experienced in the last 10 years. Technological, legislative, economic, and sociological factors are all playing vital roles in shaping the environment within which database information services operate. Advanced technologies such as videotext, videodisk, electronic mail, teleconferencing, and word processing have equipped information services with a variety of mechanisms for delivering information and the tools for its economic capture and processing. The area needing the most analysis today is that of the information user, and training and pricing are the major challenges that the marketplace imposes upon database publishers. Four issues that will prompt continued discussion in the industry are pricing, downloading, technology, and the computerization of business. In order to prosper, database publishers will have to be able to handle a much greater product offering with more customized or individualized service. As users of information become sensitized to the various methods and modes by which they can obtain information, traditional print publication and online services will coexist. (DMC)

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THE FUTURE OF DATABASE INFORMATION SERVICES

Association of Information and Dissemination Centers Conference

September 20, 1982

Cambridge, Massachusetts

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The Future of Database Information Services

Dennis Auld

Data Courier, Inc.

As the theme of this meeting indicates, we are all concerned with the future of the database information services industry. In my opinion the future of the industry, and, in particular, that of database producers, looks very good. Never before have there been opportunities such as those before us now. Concurrently, never before have there been as many factors to watch, and watch carefully, as there are now. The safest statement that can be made is that the changes affecting delivery of information over the next 10 years are going to be more numerous, farther reaching, and more rapid than those experienced in the last 10 years.

First, I'd like to talk about the impact of technology on our business, then discuss three opportunities change brings, and close by talking about the outlook in the next few years.

Technological, legislative, economic, and sociological factors are all playing vital roles in shaping the environment within which we operate. They all have impact on the single most important factor to all of us--that of the speed, depth, and degree society embraces electronic delivery of information to enhance, supplement, or replace traditional print forms.

Traditionally the two major barriers to the use of electronic delivery have been cost and ease of use. Technology has advanced sufficiently to remove some of the ease-of-use barriers and has certainly had an impact on the cost factor.

For example, lets look at some of the necessary items:

- Terminals--there are more; they are cheaper, multi-functional and easier to use; they are application specific; there is a greater choice and better support
- Microcomputers--there is a greater variety; they are more versatile, cheaper, and have better maintenance; there is more software and better upgradeability
- Communications--there is more variety; the costs are decreasing; it is more reliable and faster
- Software--it is versatile, faster, and more modular; there is better support, and it is easier to use.

In addition to the decline in costs of existing equipment, technology is presenting us with new developments to understand and use. Videotext, videodisk, electronic mail, teleconferencing, and word processing present opportunities and challenges which must be evaluated when creating, packaging, and delivering information. For example:

- Videotext--a delivery mechanism which will allow database producers to add graphic capabilities to our existing alphanumeric offering as well as potential widespread consumer appeal

- Videodisk--likewise, an exciting potential delivery vehicle which can add the dimensions of video and audio as well as the potential of very low cost storage and retrieval
- Electronic mail--provides a potential means of circulating portions of our database offerings, and combining them with other information sources within an organization
- Teleconferencing--no longer a gimmick, could be used in conjunction with electronic mail to form electronic displays which integrate voice, picture, and text
- Word processing--the evolution of these devices has progressed to now include communications, storage, and retrieval which potentially allows a forum for integration of internal and external files.

Just as technology has equipped us with a variety of mechanisms to deliver information, it has also developed tools by which we can economically capture and process this information.

A database publisher can look at the feasibility of publishing a database of citations, citations and abstracts, or full-text. Capturing key strokes and utilizing pre-composition software has allowed economic processing for both print and electronic versions. Technologies such as optical character recognition have come quite a way in the last few years. Likewise, utilizing terminals in place of typewriters for direct input subsequent to editorial review, is also economically feasible now.

Producing a database consisting of citations and abstracts is still very much labor intensive, and therefore, subject to the inflationary pressures of wage rates. Editing and indexing of abstracted files is very expensive. A database producer should carefully evaluate the requirements of his marketplace in regard to producing a citation only, citation and abstract, or a full-text file. Although auto-indexing methods have proven to be consistently bad, there is progress which holds hope for the future. Better and cheaper composition software and hardware are also much more prevalent now.

As I noted previously, the speed at which change occurs can be illustrated by considering the word processing revolution. As recently as five years ago, companies in the paper production business (for example, law firms, consultants, and publishers) relied upon typewriters with little or no memory. Today, word processors allow users to create, store, manipulate, and transmit documents or files across the office or across the continent. Their use has proliferated and the technical advances are amazing. From the relatively inefficient mag card machines, we have computers which can function as typewriters and full-scale calculating units. The move from stand alone to communicating with storage and retrieval are valleys which have been jumped in a relatively short time.

Whereas it is important for database publishers to take advantage of cost saving technology and procedures, their greatest effort has to be aimed at the revenue side.

Not only do the technological advancements mentioned come into play, but the economic, legislative, and sociological factors as well. We mentioned the economic advantages of the rapidly decreasing costs of equipment and communications. The implications of the copyright legislation as well as the deregulation of AT&T are very important. The impact of the CITIBANK decision--as well as whether or not you can deduct your personal computer for business reasons--will also have a significant effect upon the marketplace. Sociological factors such as business people's acceptance of new methods to access information, stands as the greatest, and most elusive issue to assess. But, it is also the most critical one for us to understand.

In short, the marketplace has been significantly influenced by a number of volatile factors. First, technology's evolution and penetration into organizations of all types and sizes; second, the managerial awareness that is taking place. The evidence is that companies are spending money for these technological innovations. Third, database publishers are aware of the new environment of opportunities and challenges.

These examples all boil down to one main point--that of the individual who will access information electronically--what makes this person tick?

Technology has certainly provided us with the tools to deliver information electronically, but it has also given us the opportunity to determine how it benefits the recipient and what these benefits are. The area needing the most analysis today is that of the information user. Good feedback mechanisms can greatly aid the

providers of information in determining what to deliver and how to deliver it.

Perhaps that is one of the reasons why the most successful database information services in our industry are those that are vertically integrated. Vertical integration allows the provider to control all levels of the product offering. It has proven to be the best way of capitalizing upon the opportunities presented to us.

For example, IMS is a vertically integrated online services company. Its president, Leon Liebman, provides comprehensive information to one segment of the advertising community. IMS gives ad men access to the data necessary to make informed media buying decisions. IMS charges customers by the number of cells pulled from the files it offers. Leibman's philosophy is to serve one market well from top to bottom. Such vertical integration offers an opportunity for a database publisher to make available its own online service. Market success may well result from serving one segment with a full range of services.

In addition to picking up value added revenues, the vertically integrated service has an excellent opportunity to get next to customers to find out what they want, how they want it, what they are going to do with it, and what they feel the value of it is.

Unfortunately, the gathering of customer information is not as easy for the majority of bibliographic database producers who traditonally have used the services of vendors providing public access to their files. Database producers must utilize expensive methods to develop

awareness and analysis of their marketplace. Because of this and other factors, this recent trend of vertical integration is accelerating. Primary publishers are developing databases, database developers are constructing their own delivery systems, and online vendors are developing databases. To what extent this evolution will carry is certainly going to occupy much time and thought over the next few years.

A second opportunity for reaching the market is the use of electronic mail, which has been getting a great deal of attention lately. Essentially electronic mail is a way to send a message from one system use to another.

Database publishers can create these messages and send them to users of the system much in the same way people subscribe to a printed information service. For example, ABI/INFORM, Data Courier's business and management information file, will be available late this fall on the Dialcom electronic mail system. With user friendly protocols, a person can do key word searching, scan the output, select one or more records, and then transmit them to other Dialcom users. This system will also allow a user to enter an interest profile which will remain resident in the system. Each week the user will get the equivalent of a custom newsletter or an electronic clipping service on the business topic or problems of interest to him.

A third opportunity is the capability of a user to download information from one or more files, reformat it, and develop a report or a new

publication. To make this practical, some timesharing systems--including Dialcom--have an editing capability built in. Some firms can store for reuse any data searched on a timesharing system. Software firms, like Context, offer programs to allow personal computer users to manipulate text, build files, and do financial calculations. A personal computer user, armed with enough memory, can prepare a broad range of numeric and textual materials at his leisure and in the format appropriate to his needs. Such an evolutionary development will have a significant impact on database publishers because of the ease of reformatting.

Let's look for a moment at what challenges the marketplace imposes upon database publishers.

The rapid proliferation of technology which will accomplish much wider use of databases will bring about unprecedented demand for training. Database publishers and timesharing companies will have to break new ground in teaching their customers how to achieve satisfactory results with the systems, data, and software packages. In-person training will have to be supplemented with online instruction, video or audio training kits, and other innovative approaches. Otherwise, a new user of a database may have a bad experience and turn to alternative sources to achieve the desired results.

Pricing is a critical challenge. The downloading of data poses a problem comparable to those posed to the print publishers by the Xerox machines. Pricing will have to be determined by evaluating such diverse factors as volume of data downloaded, reuse of the information, royalties paid for derivative information products,

speed of downloading, etc. If pricing is too high, the publishers will lose customers because of their inability to pay high costs, or if too low, revenue will be insufficient to keep the publisher in business.

The variety of potential products made possible through the sophistication of the user and the equipment involved, will cause database publishers to incorporate multiple use pricing in addition to the single use pricing schemes currently employed.

What's the outlook?

Looking ahead, my experience suggests four issues which will prompt continued discussion in our industry.

First, what about pricing? What approaches, algorithms, and charges are appropriate for the new technologies? There will not be any one answer; rather, individualized pricing strategies will be developed. Some of them quite innovative, combining royalties, online connect charges, output pricing, etc.

Second, what about downloading? It's here to stay. The challenge will be developing a strategy for dealing with the inevitable which is certain to be complex. Fair return without overburdening the user with complicated pricing mechanisms, or demanding sophisticated accounting systems on the part of the vendor, has to be taken into account.

Third, what about technology? The changes will accelerate, and we will have to stay abreast of the new developments emerging from laboratory and engineering firms worldwide.

Fourth, what about the computerization of business? It is upon us and it is imperative that we know just how the individual is perceiving it. Cyberphobia may be a disease afflicting a few managers, but the vast majority of professionals will become computer literate.

Manipulation of data will become as common as reading printed publications.

In order to prosper, database publishers will have to be able to handle a much greater product offering. The demands of the marketplace will certainly be along the lines of more customized or individualized service. Becoming part of that process will be necessary.

In closing, what about traditional print publications? They are here to stay. More specialized publications, more books and periodicals, and more communications will proliferate. Online and print will co-exist. Each will take a new form and shape as users of information will not only be sensitized to the various methods by which they can obtain information, but, through which mode presents the best alternative for that specific moment and need.